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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/885,046

06/21/2001

Naoki Shibata

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05/28/2004

T36-133525M/KOH

EXAMINER

HU, SHOUXIANG

SEAN M. MCGINN
MCGINN & GIBB, PLLC
8321 OLD COURTHOUSE ROAD
SUITE 200
VIENNA, VA 22182-3817

ART UNIT

PAPER NUMBER

2811

DATE MAILED: 05/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/885,046

Applicant(s)

SHIBATA ET AL.

Examiner

Shouxiang Hu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 and 32-47 is/are pending in the application.
- 4a) Of the above claim(s) 35,36,38,43 and 44 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3,5-7,32-34,37,39-42 and 45-47 is/are rejected.
- 7) ☒ Claim(s) 4 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. During a telephone interview on November 26, 2003, attorney Balnave confirmed that applicant indeed intended to elect Species II and/or III for prosecution, instead of Species I as stated in the 2-12-02 election. **Request for reconfirmation of the species election was made in the previous Office action, but the applicant was nonresponsive for failing to address on this matter. And, it is re-requested that reconfirmation of the species election should be made for the record by applicant in replying to this Office action.**

In view of the previous Office action, claims unreadable on Species II and/or III are withdrawn from consideration as being directed to a non-elected invention in this Office action. See 37 CFR 1.142(b) and MPEP § 821.03.

More specifically, claims 35, 36, 38 and 43-44 are directed to inventions that are distinct from the invention of Species II and/or III as originally claimed and intended to be elected, as they are each unreadable on either Species II of Fig. 7 or Species III of Fig.

9.

Accordingly, claims 1-7 and 32-47 are pending in this application; and claims 1-7, 32-34, 37, 39-42 and 45-47 remain active in this Office action.

Claim Objections

2. Claims 33, 34, 40 and 41, insofar as being supported by applicant's elected species (Species II and/or III), are objected to because of the following informalities and/or defects:

In claim 33, line 2, the term of "portions each" should read as: --portions, each--.

In claim 34, line 3, the term of "said entirety" should read as: --an entirety--.

Claim 40 is objected to as it recites a slop portion of down to 5 %, which is unreadable on the elected species —Species II of Fig. 7 or Species III of Fig. 9--.

In claims 40 and 41, it is not the slop area that is directly used in the specification for the calculations of the recited percentages.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-3, 5-7, 32-34, 37, 39-42 and 45-47, as being best understood in view of the claim objections above, are rejected under 35 U.S.C. 102(e) as being anticipated by Kern et al. ("Kern"; 6,194,742).

Kern discloses a GaN-based-comopund light-emitting device (Fig. 3; also see col. 1, lines 29-64, and col. 3, lines 6-22, and lines 66-67), comprising: a substrate (12, sapphire); a sedimentary layer (14; AlN); a Mg-doped GaN undercoat layer (16); group-III nitride compound semiconductor layers (18, 20, 22), wherein the undercoat layer in Kern naturally has a surface with convex portions each shaped substantially like a truncated hexagonal pyramid, since the undercoat layer therein is also formed of a Mg-doped GaN layer with a Mg concentration as high as up to $5 \times 10^{21} \text{cm}^{-3}$, which naturally meets the conditions set forth in the instant invention for the formation of the recited undercoat layer (see page 14, line 18, through page 15, line 9, and page 32, lines 9-13 of the instant disclosure).

Regarding claims 40 and 41, the surface of the undercoat layer in Kern would naturally have the convex portions, of which the projected sloped area would be naturally within 30% to 70%, as it naturally meets the conditions set forth in the instant invention for the formation of the recited undercoat layer.

Regarding claim 46, it is noted that at least the bottom surface of layer 18 in Kern naturally comprises convex portions corresponding the naturally convex-shaped surface of the undercoat layer (16).

Allowable Subject Matter

4. Claim 4 would be allowable if rewritten or amended to overcome the claim objection(s) set forth in this Office action.

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5. The following is a statement of reasons for the indication of allowable subject matter: Prior art does not teach or render obvious a Group-III nitride compound semiconductor device, comprising a Mg-doped GaN undercoat layer, wherein the undercoat layer having a surface with convex portions each shaped like a truncated hexagonal pyramid; and the undercoat layer is also doped with an n-type dopant and is of an n-type overall.

Response to Arguments

6. Applicant's arguments with respect to claims 1-7, 32-34, 37 and 39-42 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

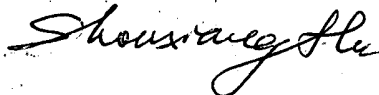
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shouxiang Hu whose telephone number is 571-272-1654. The examiner can normally be reached on Monday through Thursday, 7:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie C. Lee can be reached on 571-272-1732. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SH
May 25, 2004



SHOUXIANG HU
PRIMARY EXAMINER